CLAIMS

1. Magnesium hydroxide particles having a hexagonal crystal form and having an aspect ratio (H) which satisfies the following expression (I),

$$0.45 \cdot A \cdot B < H < 1.1 \cdot A \cdot B \qquad (I)$$

wherein H is an aspect ratio, A is an average secondary particle diameter (μm) of all of the particles measured by a laser diffraction scattering method and B is a specific surface area (m^2/g) of all of the particles measured by a BET method.

2. The magnesium hydroxide particles of claim 1, wherein the aspect ratio (H) satisfies the following expression (I-a),

$$0.50 \cdot A \cdot B < H < 1.1 \cdot A \cdot B \qquad (I\text{-}a)$$

wherein A and B are as defined in the expression (I).

3. The magnesium hydroxide particles of claim 1, wherein a volume ratio of magnesium hydroxide particles having a secondary particle diameter (F) satisfying the following expression (II) is at least 60 % based on a volume of all of the particles,

$$0.3 \cdot A < F < 1.7 \cdot A \qquad (II)$$

wherein F is a secondary particle diameter (μm) of the magnesium particles, and A is as defined in the expression (I).

4. The magnesium hydroxide particles of claim 1, which have an average secondary particle diameter (A), measured by a laser diffraction scattering method, of 0.15 to 5.0 μm.

5. The magnesium hydroxide particles of claim 1, which have an average secondary particle diameter (A), measured by a laser diffraction scattering method, of 0.50 to 3.0 μm.

6. The magnesium hydroxide particles of claim 1, which have a specific surface area (B), measured by a BET method, of 1 to 150 m^2/g.

7. The magnesium hydroxide particles of claim 1, which have a specific surface area (B), measured by a BET method, of 2 to 130 m^2/g.

8. The magnesium hydroxide particles of claim 1, wherein a total content, as a metal, of an iron compound and a manganese compound is 0.01 % by weight or less.

9. The magnesium hydroxide particles of claim 1, wherein a total content, as a metal, of an iron compound, a manganese compound, a cobalt compound, a chromium compound, a copper compound, a vanadium compound and a nickel compound is 0.02 % by weight or less.

10. The magnesium hydroxide particles of claim 1, which are magnesium hydroxide particles surface-treated with at least one surface-treating agent selected from the group consisting of higher fatty acids, anionic surfactants, phosphate esters, coupling agents and esters formed from polyhydric alcohols and fatty acids.

11. A method of producing the magnesium hydroxide particles of claim 1, which comprises reacting magnesium chloride with an alkaline substance in an aqueous medium to produce magnesium hydroxide particles, wherein the reaction is carried out in the presence of 0.01 to 150 mol%, based on the magnesium chloride, of at least one compound selected from the group consisting of an organic acid, boric acid, silicic acid and water-soluble salts of these.

12. The method of claim 11, wherein the magnesium hydroxide particles obtained by the reaction are further hydrothermally treated.

13. A method of producing magnesium hydroxide particles of claim 1, which comprises reacting magnesium chloride with an alkaline substance in an aqueous medium to obtain a slurry of magnesium hydroxide particles, and hydrothermally treating the slurry to produce the magnesium hydroxide particles, wherein the hydrothermal treatment is carried out in the presence of 0.01 to 150 mol%, based on the magnesium hydroxide, of at least one compound selected from the group consisting of an organic acid, boric acid, silicic acid and water-soluble salts of these.

14. A method of producing magnesium hydroxide particles of claim 1, which comprises hydrating magnesium oxide in an aqueous medium to produce magnesium hydroxide particles, wherein the hydration is carried out in the presence of 0.01 to 150 mol%, based on the magnesium oxide, of at least one compound selected from the group consisting of an organic acid, boric acid, silicic acid and water-soluble salts of these.

15. The method of claim 14, wherein the magnesium hydroxide particles obtained by the hydration are further hydrothermally treated.

16. A method of producing magnesium hydroxide particles of claim 1, which comprises hydrating magnesium oxide in an aqueous medium to obtain a slurry of magnesium hydroxide particles and then hydrothermally treating the slurry to produce the magnesium hydroxide particles, wherein the hydrothermal treatment is carried out in the presence of 0.01

to 150 mol%, based on the magnesium hydroxide, of at least one compound selected from the group consisting of an organic acid, boric acid, silicic acid and water-soluble salts of these.

17. A flame retardant comprising magnesium hydroxide particles having a hexagonal crystal form and having an aspect ratio (H) which satisfies the following expression (I),

$$0.45 \cdot A \cdot B < H < 1.1 \cdot A \cdot B \qquad (I)$$

wherein H is an aspect ratio, A is an average secondary particle diameter (μm) of all of the particles measured by a laser diffraction scattering method and B is a specific surface area (m^2/g) of all of the particles measured by a BET method.

18. The flame retardant of claim 17, wherein the magnesium hydroxide particles have an aspect ratio (H) satisfying the following expression (I-a),

$$0.50 \cdot A \cdot B < H < 1.1 \cdot A \cdot B \qquad (I\text{-}a)$$

wherein A and B are as defined in the expression (I).

19. The flame retardant of claim 17, wherein a volume ratio of the magnesium hydroxide particles having a secondary particle diameter (F) satisfying the following expression (II) is at least 60 % based on a volume of all of the particles,

$$0.3 \cdot A < F < 1.7 \cdot A \qquad (II)$$

wherein F is a secondary particle diameter (μm) of the magnesium hydroxide particles, and A is as defined in the expression (I).

20. The flame retardant of claim 17, wherein the magnesium hydroxide particles have a specific surface area (B), measured by a BET method, of 30 m^2/g or less.

21. The flame retardant of claim 17, wherein the magnesium hydroxide particles have a specific surface area (B), measured by a BET method, of 3 to 20 m^2/g.

22. The flame retardant of claim 17, wherein the magnesium hydroxide particles have a specific surface area (B), measured by a BET method, of 3 to 10 m^2/g.

23. The flame retardant of claim 17, wherein the magnesium hydroxide particles have a total content of an iron compound and a manganese compound, as a metal, of 0.01 % by weight or less.

24. The flame retardant of claim 17, wherein the magnesium hydroxide particles have a total content of an iron compound, a manganese compound, a cobalt compound, a chromium compound, a copper compound, a vanadium compound and a nickel compound, as a metal, of 0.02 % by weight or less.

25. A flame-retardant resin composition comprising 100 parts by weight of a synthetic resin and 5 to 300 parts by weight of magnesium hydroxide particles having a hexagonal crystal form and having an aspect ratio (H) which satisfies the following expression (I),

$$0.45 \cdot A \cdot B < H < 1.1 \cdot A \cdot B \qquad (I)$$

wherein H is an aspect ratio, A is an average secondary particle diameter (μm) of all of the particles measured by a laser diffraction scattering method and B is a specific surface area (m^2/g) of all of the particles measured by a BET method.

26. The flame-retardant resin composition of claim 25, wherein a volume ratio of the magnesium hydroxide particles included in a width of a secondary particle diameter (F)

distribution represented by the following expression (II) is at least 60 % based on a volume of all of the particles,

$$0.3 \cdot A < F < 1.7 \cdot A \qquad \text{(II)}$$

wherein F is a width of secondary particle diameter (μm) distribution of the magnesium hydroxide particles, and A is an average secondary particle diameter (μm) of all of the particles measured by a laser diffraction scattering method.

27. The flame-retardant resin composition of claim 25, wherein the magnesium hydroxide particles have a specific surface area (B), measured by a BET method, of 30 m^2/g or less.

28. The flame-retardant resin composition of claim 25, wherein the magnesium hydroxide particles have a specific surface area (B), measured by a BET method, of 3 to 20 m^2/g.

29. The flame-retardant resin composition of claim 25, wherein the magnesium hydroxide particles have a specific surface area (B), measured by a BET method, of 3 to 10 m^2/g.

30. The flame-retardant resin composition of claim 25, wherein the magnesium hydroxide particles are magnesium hydroxide particles surface-treated with at least one surface-treating agent selected from the group consisting of higher fatty acids, anionic surfactants, phosphate esters, coupling agents and esters formed from polyhydric alcohols and fatty acids.

31. The flame-retardant resin composition of claim 25, wherein the magnesium hydroxide particles have a total content of an iron compound and a manganese compound, as a metal, of 0.01 % by weight or less.

32. The flame-retardant resin composition of claim 25,

wherein the magnesium hydroxide particles have a total content of an iron compound, a manganese compound, a cobalt compound, a chromium compound, a copper compound, a vanadium compound and a nickel compound, as a metal, of 0.02 % by weight or less.

33. The flame-retardant resin composition of claim 25, which further contains 0.5 to 20 % by weight, based on a total weight of (a) the synthetic resin and (b) the magnesium hydroxide particles, of (c) a flame-retardant aid.

34. The synthetic resin composition of claim 33, wherein the flame-retardant aid is red phosphorus, a carbon powder or a mixture of these.

35. A molded article formed of the resin composition recited in claim 25.

36. The molded article of claim 35, which substantially does not contain any halogen.